E.L.M.

ENTTEC LED MAPPER

Effortless LED Mapping

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Key Features

- ✓ Vector-based editor
- ✓ 512 DMX Universes
- ✓ Art-Net and sACN
- ✓ Scheduled playlists
- ✓ Remote control via a lighting console
- ✓ HD Video playback
- ✓ Spout compatible for live video inputs
- ✓ DVI outputs for projectors and TVs
- ✓ Troubleshoot mode
- ✓ Video loop library included
- ✓ RGB, RGBW, and white fixtures

Computer Requirements

ELM is compatible with Windows 7 and up, including Windows 8 and 10. 32 and 64 bit versions are provided to fit your OS.

The .Net 4.5 framework is required and you'll be prompted to install it if needed.

Minimum

- Windows 7+, 2GHz Intel i5, 2 GB RAM
- ATI Radeon HD 5000 series or better, or NVIDIA GeForce 210 or better.

Recommended

- Windows 8 or 10, 2GHz Intel i7, 8 GB RAM
- NVidia GTX 780
- SSD drive

The computer requirements depend mainly on your media type. For example, playing multiple HD videos requires a good computer. A rule of thumb is you can play one full HD video @ 30fps for each 2GHz CPU core. So if you have an Intel i7 4GHz (4 cores), you can expect to be able to play 8 full HD videos. Increasing the playback speed to 2x means the fps also increases two times and the number of videos you can play simultaneously is roughly divided by two.

The next table gives you the approximate number of videos you can play simultaneously at 30 fps depending on your CPU.

CPU Speed x Cores	Full HD Videos	HD Videos	640x360 Videos
2 GHz x 2	2	4	10
3 GHz x 2	3	6	15
4 GHz x 2	4	9	20
2 GHz x 4	4	9	20
3 GHz x 4	6	13	30
4 GHz x 4	8	18	> 40
3 GHz x 8	10	22	> 40

For live video performances, when you want to change the playback speed and go up to 10x, the recommended video resolution is 640x360.

For the DMX output, a 1GBits network card should be able to handle 256 universes. For more universes, a supplementary network card and a second Ethernet network are recommended, but may not be necessary in your situation.

Licenses

Each license is registered to one person and covers the use of the software on a certain number of computers depending on the license type purchased, so long as ELM is running on one computer at a time. The license is linked to your computer's CPU and motherboard. You can upgrade any other components and reinstall the OS without invalidating your license.

A license isn't transferrable, meaning once your computer stops working, you can only activate ELM on another computer if you still have activations left. Use this online form to activate a computer: https://www.enttec.com/elm_license.

	Student	Pro	Architectural
DMX universes limit	16 (2720 RGB LEDs)	96 (16320 RGB LEDs)	512 (87040 RGB LEDs)
Software updates	All included	All included	All included
Support	Email	email, Skype	email, Skype, phone

To buy your license, you'll need your Hardware ID. It's displayed when starting ELM and in the Settings/License menu.

Software Updates

All minor updates and bug fixes are free of charge. This way, you always have access to the latest and greatest version.

To get the updates, go in the Settings/About menu and press the check for updates button. Alternately, you can go on the Enttec website and download the latest version.

Definitions

Art-Net: Protocol to transmit DMX over a standard Ethernet network. Designed by and Copyright Artistic Licence Holdings Ltd.

DMX: One of the most common protocols used to control lighting fixtures. The full name is DMX512, which stands for Digital Multiplex.

DMX universe: Represents 512 DMX channels. Enough for 170 RGB LEDs (1 LED takes 3 channels, one for red, one for green and one for blue).

FPS: Frames per second. It refers to an output rate.

LED strip/string: Lighting fixture that may contain many LED elements and have a certain physical length. Some LED strips are flexible and can be bent to create curves and all kind of shapes. ELM handles all lighting fixtures like strips, giving you a lot of positioning flexibility.

Mapping: Mechanism used to associate a pixel from a media source to a specific lighting fixture element.

Media: Any type of visual content, including videos and pictures.

Patch: List of lighting fixtures and their corresponding DMX addresses.

sAcn: Protocol to transmit DMX over a standard Ethernet network - like Art-Net. More specifically, the E1.31 subset is used for DMX control. Developed by ESTA.

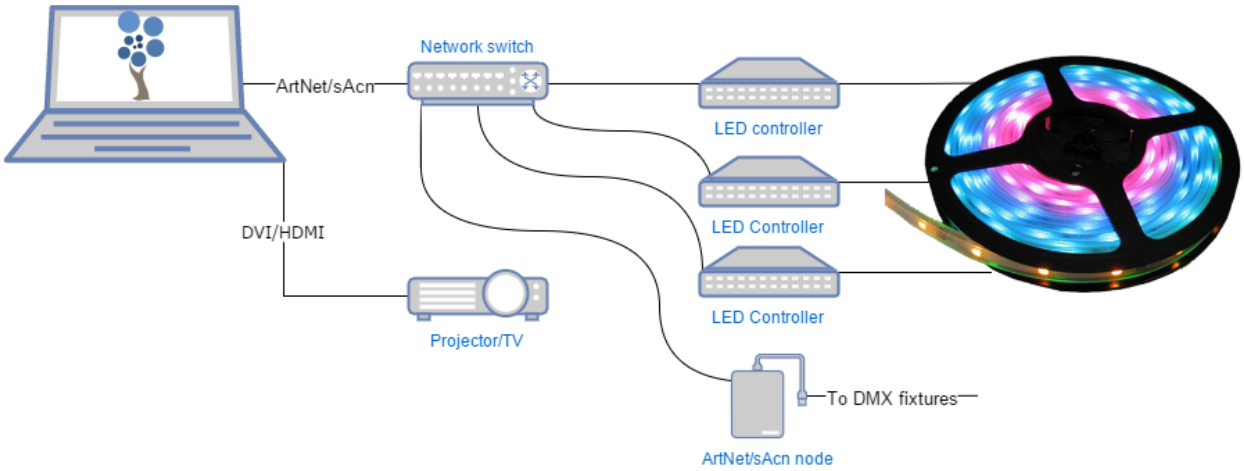
Spout: Real-time video sharing framework for Windows. Similar to Syphon on Mac. http://spout.zeal.co/

Stage: A mapping surface defining the position of the media placeholder and the position of lighting fixtures.

Getting Started With LED Strips

ELM can control any DMX-enabled lighting fixtures – not only LED strips. This is made possible because ELM outputs Art-Net and sAcn. So feel free using ELM to control traditional dimmers and any RGB, RGBW and white DMX lighting fixtures.

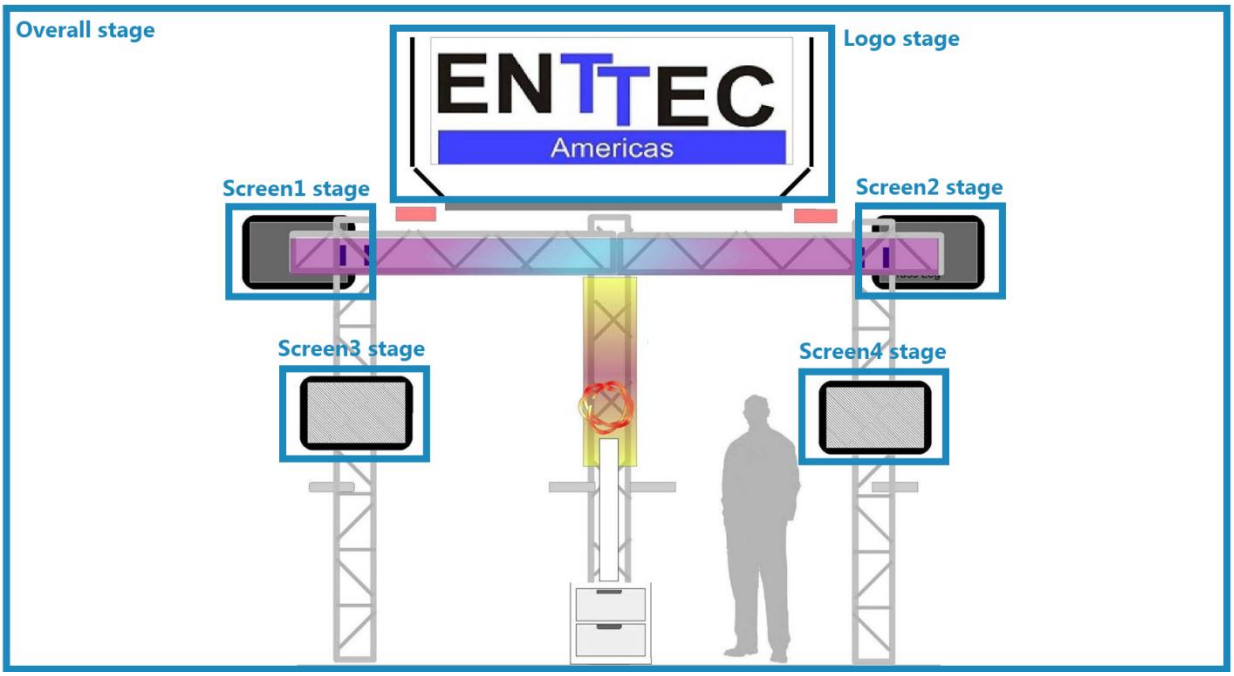
Controlling LED strips is a little bit different than traditional DMX fixtures. The main difference is that you need to use LED controllers to drive your strips. They replace the Art-Net nodes you use for traditional DMX fixtures. The LED controller receives DMX via Art-Net/sAcn and converts to the special protocol the LEDs understand. Enttec offers the Pixelator which takes 48 DMX universes and controls up to 8160 RGB LEDs.



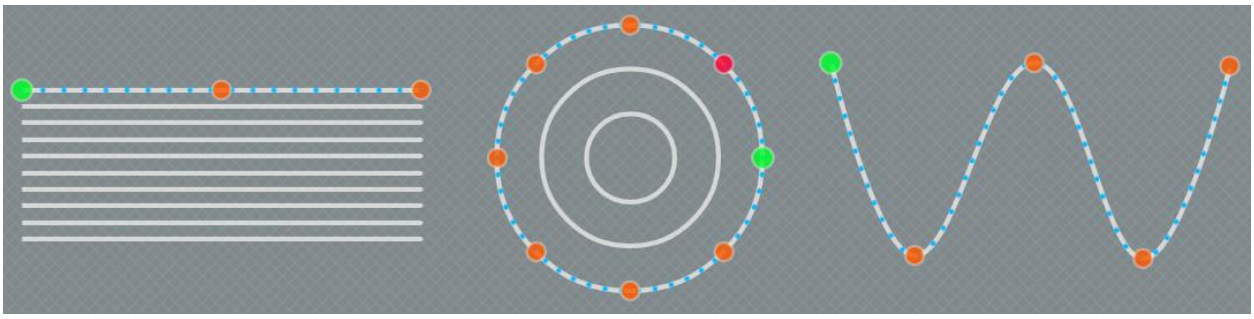
The next step is to get LED strips and DMX fixtures. Since there are many LED protocols out there, you need to make sure your LED controller fits with your LEDs. Common protocols for RGB LEDs are WS2811 and WS2812/B. For more information about getting compatible LEDs, contact your Enttec representative. Here's the Enttec Pixelator that can be used to control the Phero and Enttec LED tapes:

Quick Overview

ELM allows dividing your installation in multiple zones called stages. You control the media content independently for each stage. Stages can overlap and they are merged (blended) to generate the final result. A common scenario is to create a stage spanning the whole installation (overall stage) to be able to map media across the board. To enable precise control over specific zones, you can create smaller stages inside the overall stage. Then you activate these zones whenever you want. For example, in the installation below, we can play a video on the overall stage - which acts as the background - and when there's a special event, we activate the logo zone and make it flash.



To represent your LED strips and DMX fixtures inside a stage, ELM gives you a powerful vector-based editor. This way, you can easily draw many types of shapes, including matrices, loops and curves. ELM computes the position of each LED for you based on your drawing.

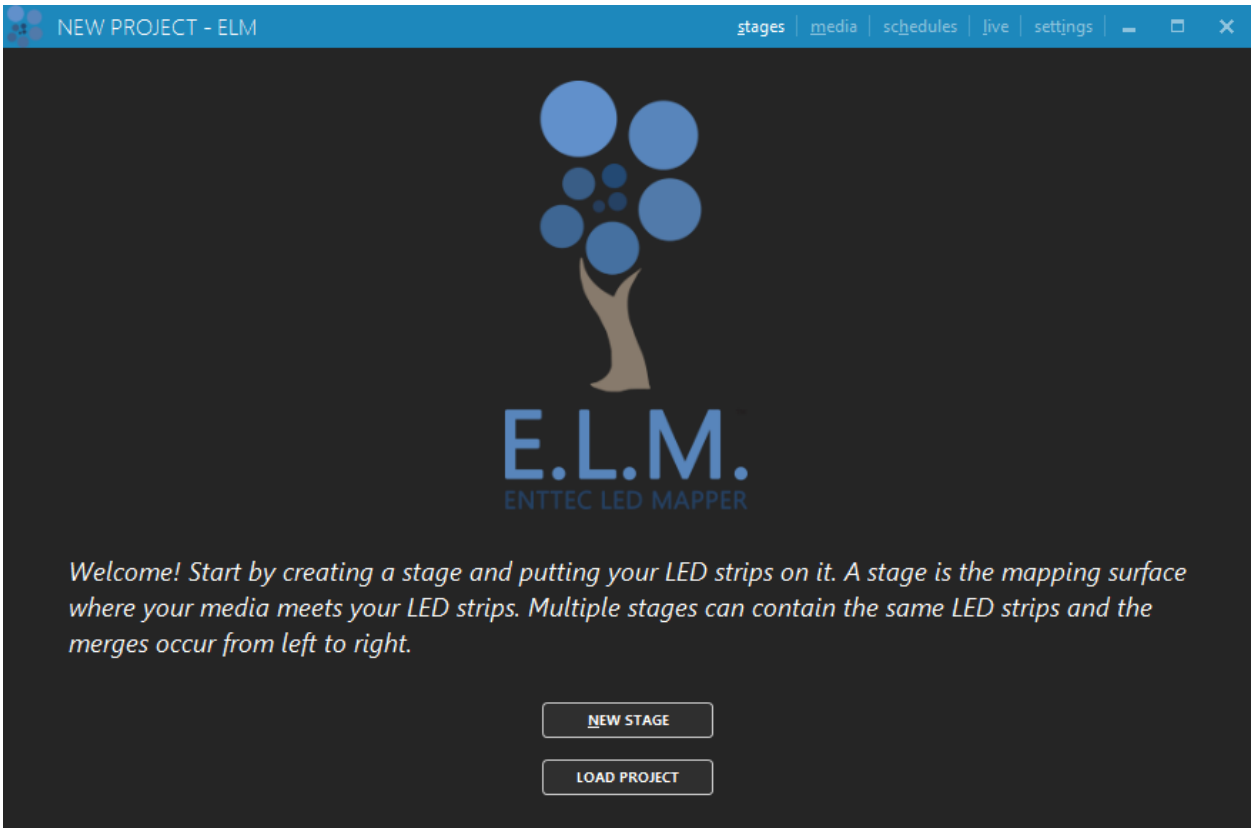


ELM Tour

Let's go over the main screens and controls of ELM.

Home Screen

Welcome! Start a new project or load an existing one. To see the keyboard shortcut keys, press the alt key.

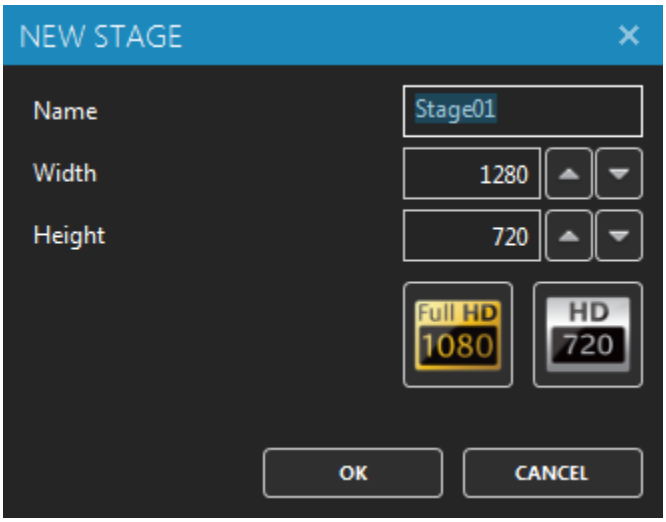

NEW PROJECT - ELM
stages
media
schedules
live
settings
E.L.M.
ENTTEC LED MAPPER
Welcome! Start by creating a stage and putting your LED strips on it. A stage is the mapping surface where your media meets your LED strips. Multiple stages can contain the same LED strips and the merges occur from left to right.
NEW STAGE
LOAD PROJECT

New stage (alt-N)	Creates your first stage and start the mapping process.
Load project (ctrl-O)	Loads an existing project.
Media (alt-M)	Goes to the media library.
Schedules (alt-H)	Goes to the schedules.
Live (alt-L)	Goes to the live panel.
Settings (alt-I)	Goes to the settings panel.

New Stage Dialog

A rule of thumb is to create a stage with dimensions respecting the aspect ratio of your media. Then you'll position your LED strips on it to create the mapping. For example, you can create a full HD stage - which has a rectangular aspect ratio - to fit your media sources, and then map a 20x20 square LED array on it.

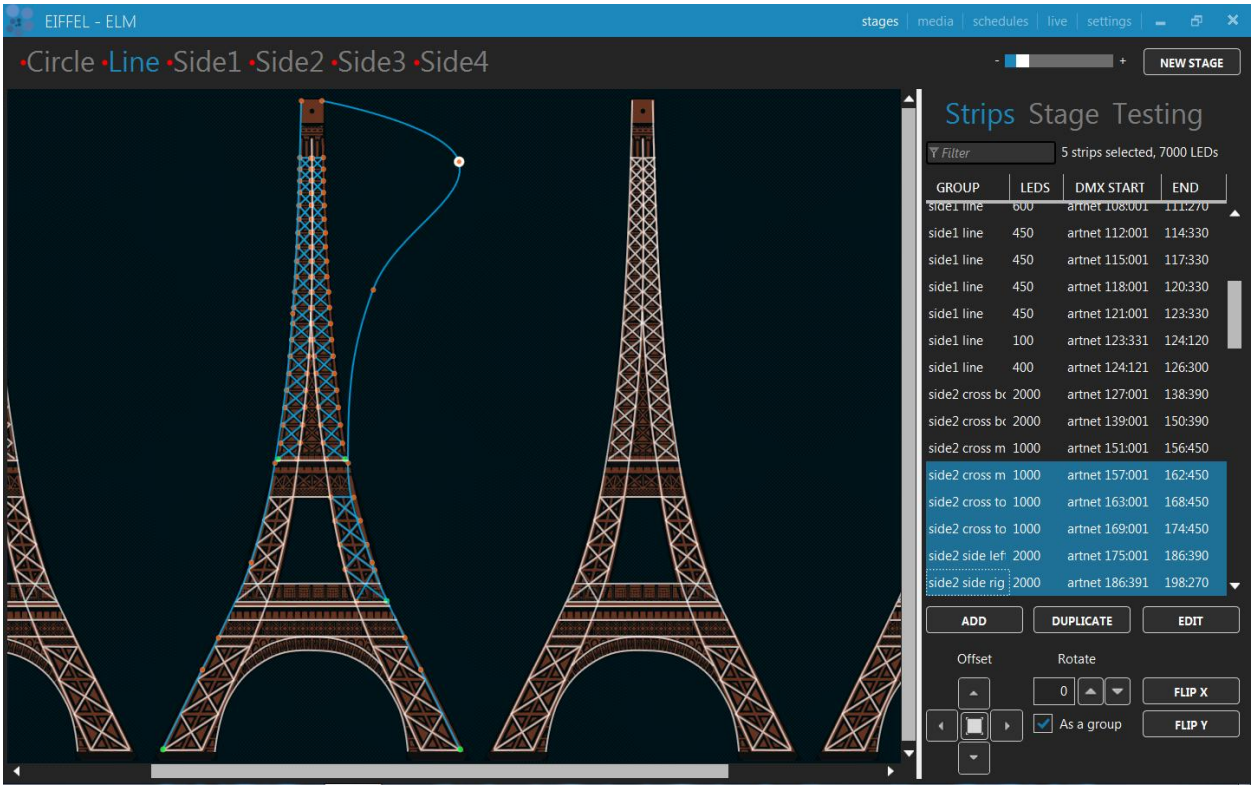
You can easily change the dimensions later, so don't worry.



Name	The name of your new stage. Usually refers to its physical location.
Width, Height	The desired size in pixels for the mapping surface used to display media. This can be changed later without affecting the mapping.
Full HD, HD buttons	Presets for common media sizes. Full HD is 1920x1080 and HD is 1280x720.

Stages

Shortcut key: alt-S



You can create as many stages as you want. Generally, you'll want an overall stage corresponding to the whole installation and multiple individual stages to target specific parts. The overall stage allows you to map content across the board. Then the other stages allow you to override specific parts of your installation when you want. You can select the current stage by clicking its name at the top. Drag and drop to reorder.

Tip: Different effects may demand different mapping layouts. One goal of the mapping is to ease the content creation. So don't hesitate creating multiple stages with the same LED strips but positioned in different ways.

Status Indicator

At the left of the stage's name, a small indicator tells you the actual control mode and its status. The activated status means a media is selected and the stage's intensity (see Live Mode) is greater than 0%.

• Stage	Manual control mode, stage deactivated.
Stage	Manual control mode, stage activated.
R Stage	Remote control mode, stage deactivated.
R Stage	Remote control mode, stage activated.
S Stage	Schedule control mode, stage deactivated.
S Stage	Schedule control mode, stage activated.
T Stage	The testing mode is active.

Stage Merging and Layering

When multiple stages contain the same LED strips, a merge occurs starting from the leftmost stage to the rightmost. This allows creating complex visuals by layering multiple stages on top of each other. A stage must be activated (a media is selected and the stage's intensity is greater than 0) otherwise it is considered to be transparent and will not be part of the merge.

There are 11 merge modes accessible via the Stage Tab.

Overwrite	Replaces completely the left stages. The right stage is fully opaque.
Multiply	Multiplies each pixel of the right stage with the corresponding pixel for the left stage. The result is a darker picture.
Screen	The values of the pixels in the two stages are inverted, multiplied, and then inverted again. This yields the opposite effect to Multiply. The result is a brighter picture.
Overlay	Combines Multiply and Screen modes. The parts of the right stage where left stage is light become lighter, the parts where the left stage is dark become darker.
Darken	Takes the smallest color component for each pixel.
Lighten	Takes the largest color component for each pixel.
Difference	Subtracts the left stage from the right stage or the other way round, to always get a positive value.
Add	Adds pixel values of one stage with the other.
Subtract	Subtracts pixel values of the right stage to the left stage.
Black key	Shows the pixels of the left stage only where the pixels of the right stage are black. In other words, black pixels are transparent.
Intensity	The stage's intensity determines its opacity level.

Stage Syncing

All stages using the same media slot are considered to be synced. You can still change the individual stage output parameters like the intensity and the color filter, but the media content is the same on all synced stages. When applicable to the media type, the media playback speed is determined by the maximum speed of all stages using this media.

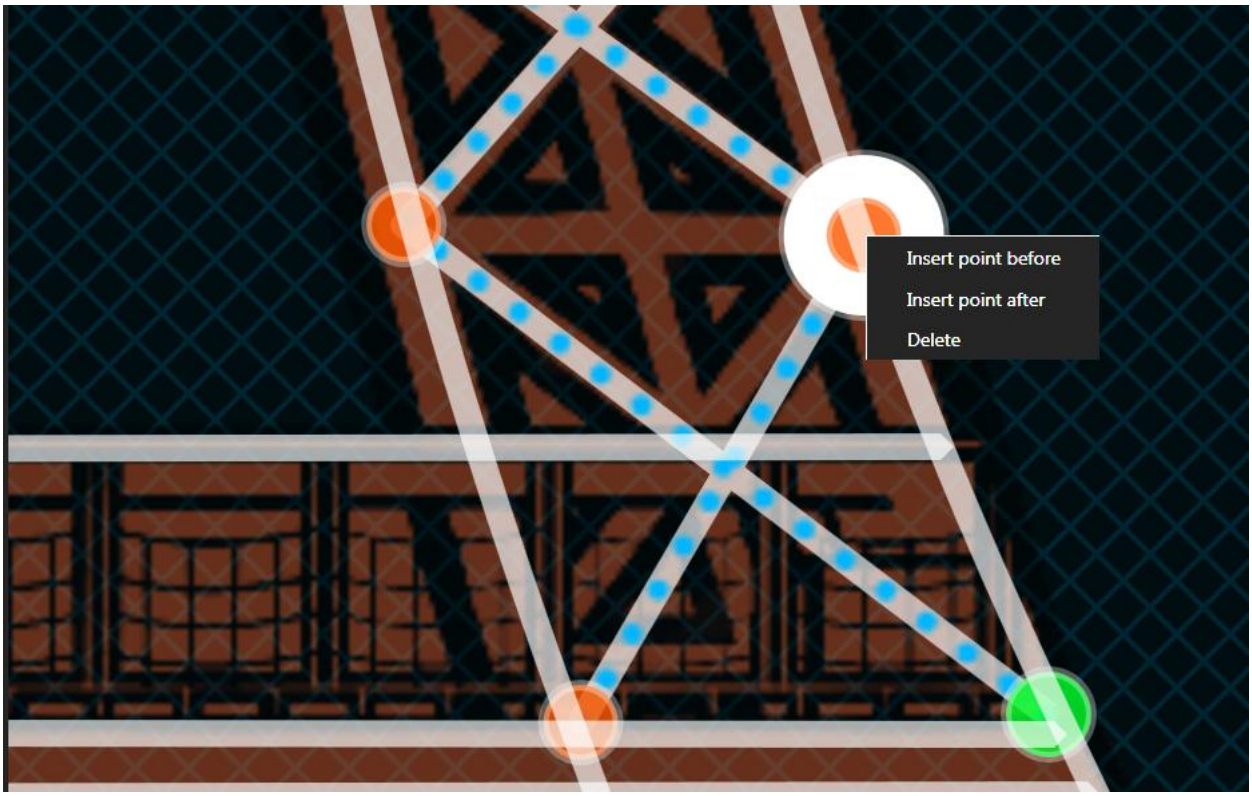
Tip: To play the same video file on multiple stages but at different speeds, load the video file in multiple media slots. Then use a different media slot for each stage.

Edit Zone

You can position your strips as they are in the real world or based on the effect you want to create with your media.

A strip has start (green) and end (red) control points telling you about the direction of the patch. Multiple intermediate control points can be used to create various shapes.

You can position parts of your strips outside the stage. In this case, the LEDs outside the stage will not be mapped. This is a common scenario when using the same strips in multiple stages and you want to target specific parts in each stage.



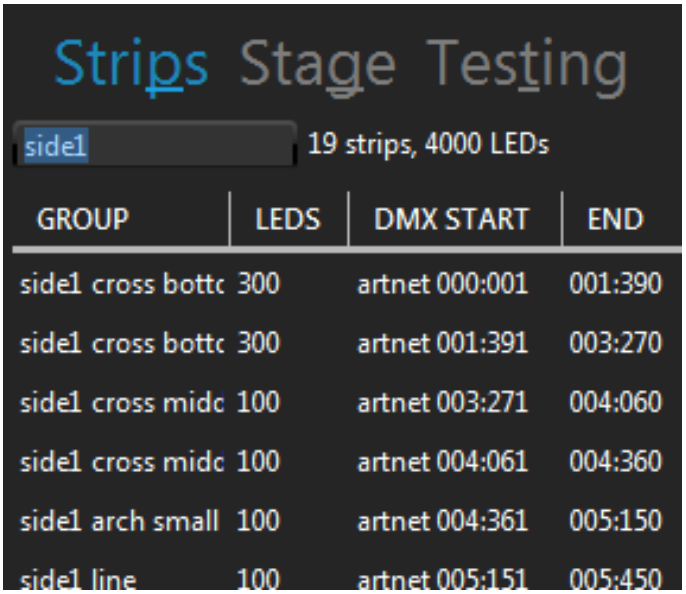
Select strips	Click a strip to select. Hold the ctrl key to add to the selection. Hold shift to use a selection rectangle and select all strips inside the rectangle.
Move a control point	Click on a control point and drag it.
Add a control point	Right-click on the stage or a control point to use the context menu.
Delete a control point	Right-click on a control point and select the delete option.
Move around the stage	Click on the stage background and drag.
Zoom in/out (ctrl-plus, ctrl-minus)	Use the zoom control at the top. Zoom out when you want to offset the selected strips quickly.

Show individual LED positions	When zoomed enough, the LEDs of the selected strips should be visible. They are the blue dots.
Copy/paste strips (ctrl-c ,ctrl-v)	Copy and paste the selected strips. You can paste the strips in a different stage.
Delete selected strips	To delete the selected strips, open the Edit Strips Dialog and choose the Delete button.
Undo (ctrl-z), Redo (ctrl-y)	You can always use Undo and Redo while editing.

Strips Tab

Shortcut key: alt-P

Strip List


Strips Stage Testing
side1
19 strips, 4000 LEDs
GROUP
LEDS
DMX START
END
side1 cross bottc 300 artnet 000:001 001:390
side1 cross bottc 300 artnet 001:391 003:270
side1 cross midc 100 artnet 003:271 004:060
side1 cross midc 100 artnet 004:061 004:360
side1 arch small 100 artnet 004:361 005:150
side1 line 100 artnet 005:151 005:450

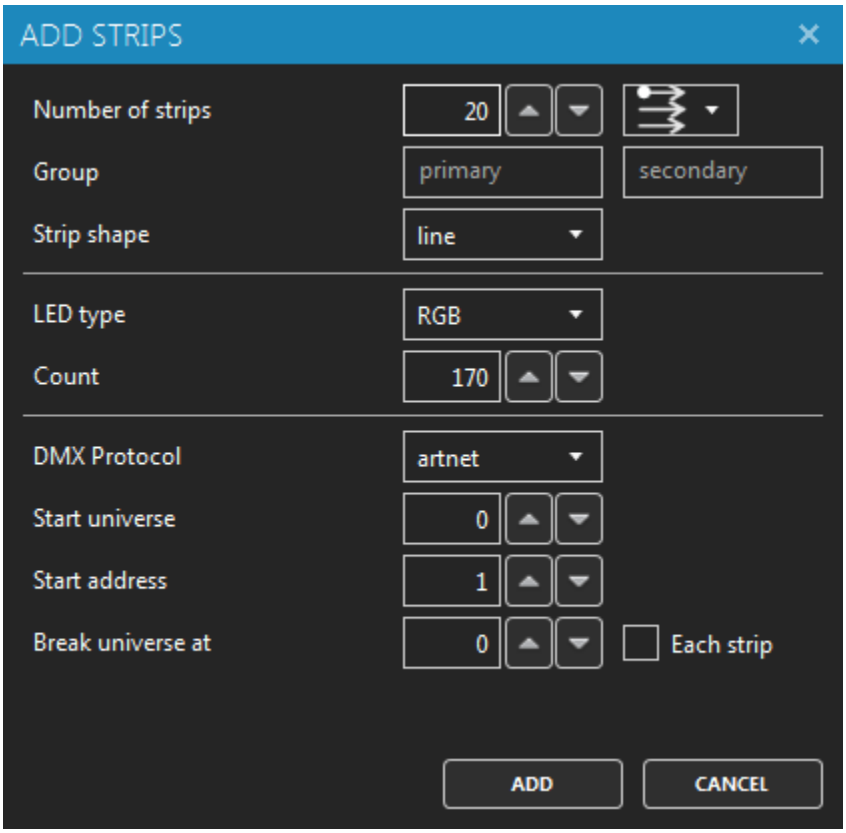
The strips for the current stage are shown in this list. Select one or multiple strips in the list to also select them in the edit zone. Right-click in the list for more selection options. You can click the column headers to sort. Type text in the filter box to filter based on the group names.

Tip: Use the primary and secondary groups wisely in order to be able to use the filter box and quickly select the strips you want.

Add Strips Dialog (Quick patching)

Shortcut key: alt-A

Quickly patch one or multiple strips.



Number of strips	The number of LED strips/fixtures you want to patch.
Patching direction	When creating an array with multiple strips, ELM gives you multiple ways to assign the DMX addresses. For example, you can patch from left to right, top to bottom or in a snake-like fashion.
Group – primary, secondary	Use these two groups to help you quickly find your strips later.
Strip shape	Select a predefined shape to position your strips on the stage. For arrays, you want to use lines. The loop creates circles.
LED type	Also named pixel type. Corresponds to the color component order (RGB, BGR, GRB, etc.) and the capability (white only, RGBW, etc.). Many LED strips have the color components in a different order than red, green and blue. Usually, LED controllers give you the option to reorder the color components but ELM can handle this for you.

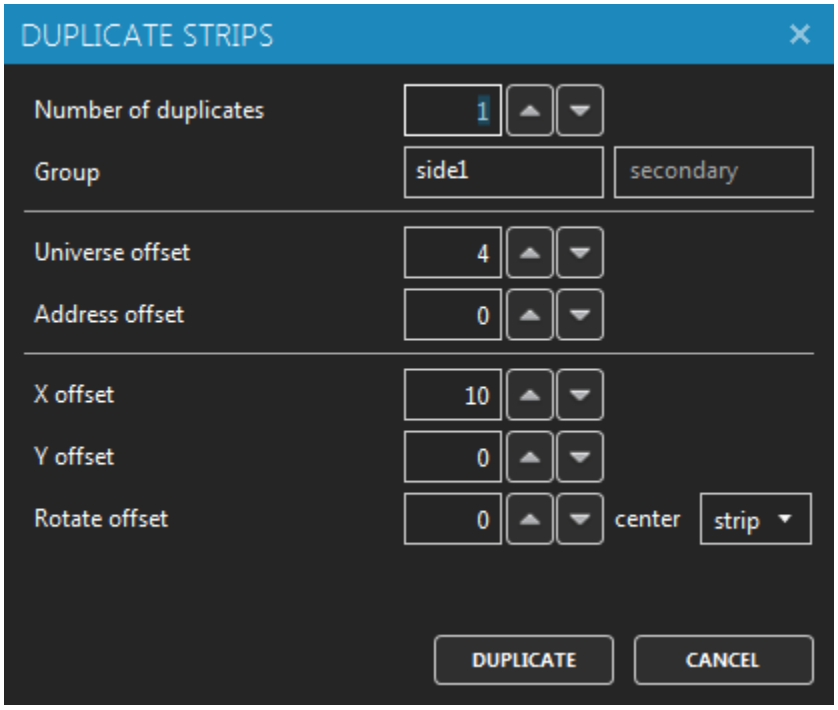
(LED) Count	The number of LEDs per strip.
DMX protocol	Select the output method for DMX. For example, Art-Net or sAcn E1.31.
Start universe	The universe of the first strip to be patched.
Start address	The address of the first strip to be patched.
Break universe at	Automatically start patching in the next universe when reaching this limit. Set to 0 to break only when the universe is full.

Tip: You've got the patching direction wrong? No problem. You can easily flip your strips horizontally and vertically later. For snake mode, right-click in the strip list and use the select odd/even option.

Duplicate Strips Dialog

Shortcut key: alt-D

Copy the selected strips and create new strips by applying certain transformations.



Number of duplicates	The number of times you want to copy the selected strips.
Group – primary, secondary	Use these two groups to help you quickly find your strips later. When creating multiple duplicates, the primary group will automatically be appended with a counter.
Universe offset	The offset used to calculate the first DMX universe of the newly created strips.
Address offset	The offset used to calculate the first DMX address of the newly created strips.
X offset	The horizontal position offset applied to the newly created strips.
Y offset	The vertical position offset applied to the newly created strips.
Rotate offset	The rotation in degrees applied to the newly created strips.
Rotate center	The position where the rotation will occur.

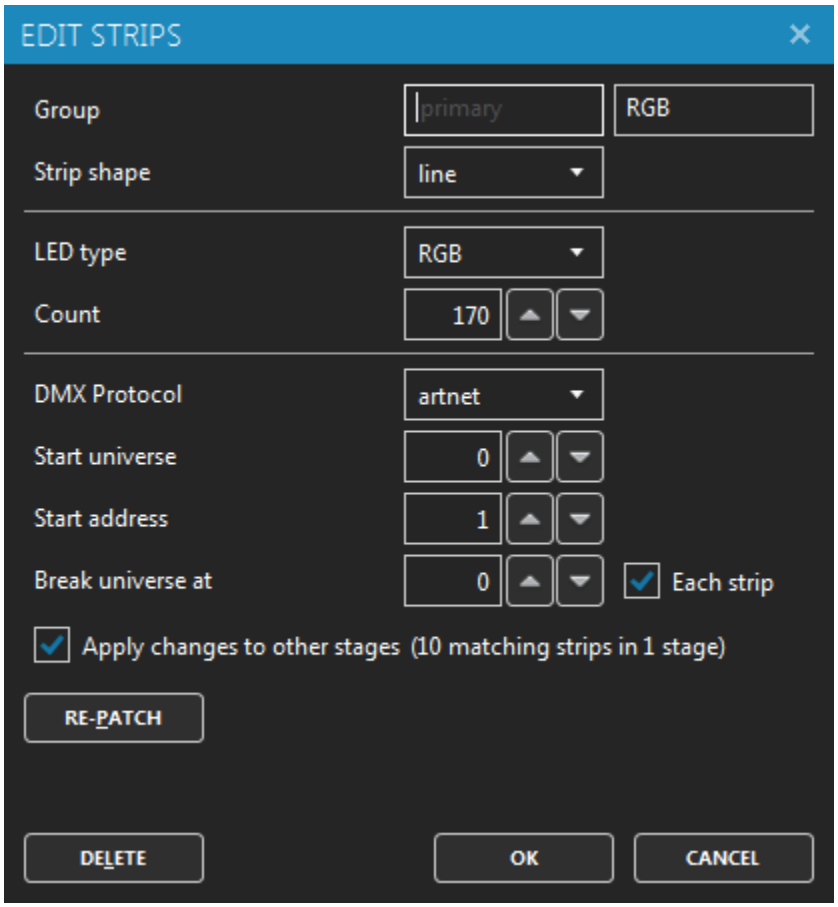
Tip: When you're in the design phase of the lighting installation, keep in mind the duplicate options. They allow creating complex shapes by copying simple elements. This is a real time saver.

Tip: To copy strips to another stage, select your strips and use the copy (ctrl-c) and paste (ctrl-v) keyboard shortcuts.

Edit Strips Dialog

Shortcut key: alt-E

Edit the selected strips and allow changing the patch.



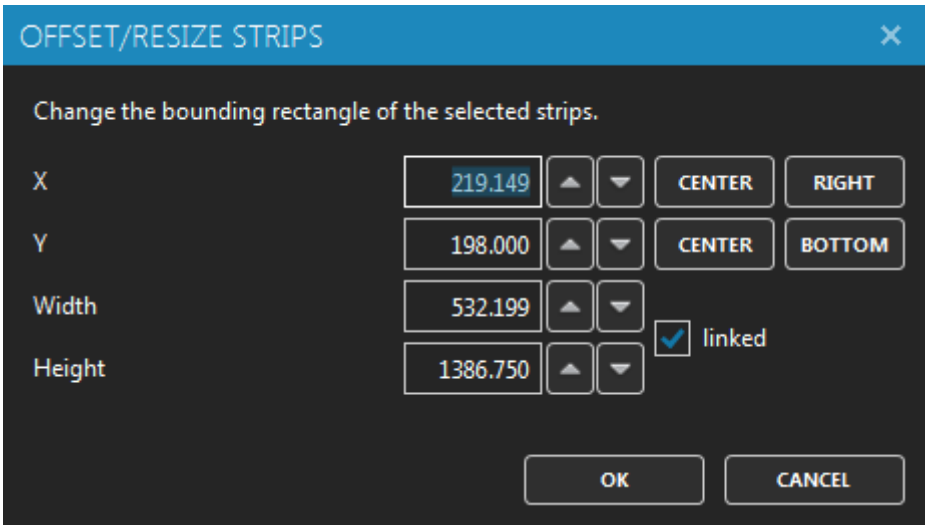
Group – primary, secondary	Use these two groups to help you quickly find your strips later.
Strip shape	Select a predefined shape to position your strips on the stage. For arrays, you want to use lines.
LED type	Also named pixel type. This corresponds to the color component order (RGB, BGR, GRB, etc.) and the capability (white only, RGBW, etc.). Many LED strips have the color components in a different order than red, green and blue. Usually, LED controllers give you the option to reorder the components but ELM can handle this for you.
(LED) Count	The number of LEDs per strip.
DMX protocol	Select the output method for DMX. For example, Art-Net or sAcn E1.31.
Start universe	The universe of the first strip to be patched.

Start address	The address of the first strip to be patched.
Break universe at	Automatically start patching in the next universe when reaching this limit. Set to 0 to break only when the universe is full.
Apply changes to other stages	Executes your changes on the matching strips in other stages. It is handy when you have copied the same strips in multiple stages in order to keep them in sync.
Re-Patch (alt-P)	Forces redoing the patch to make sure all selected strips are patched one after another.
Delete (alt-L)	Deletes the selected strips.

Offset/Resize Strips Dialog

Shortcut key: alt-O + enter

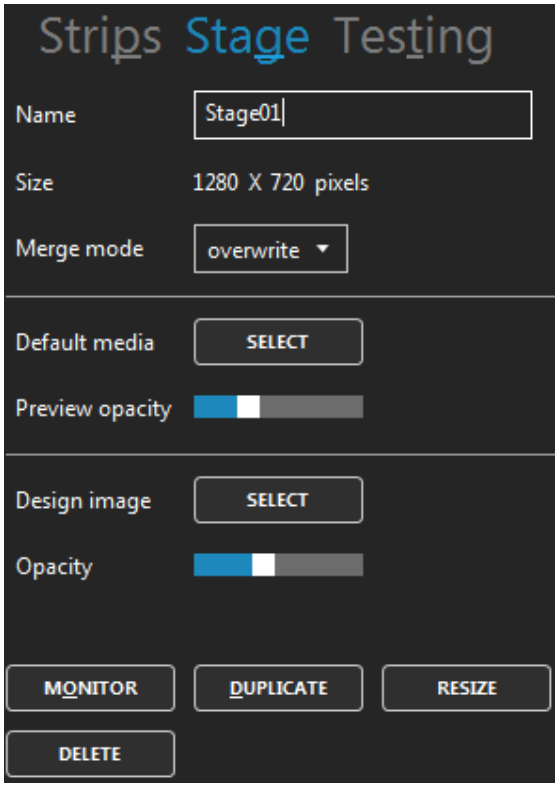
Change the bounding rectangle of the selected strips.



X	The position of the left boundary of the rectangle. A value of 0 means the far left of the stage.
Y	The position of the top boundary of the rectangle. A value of 0 means the top of the stage.
Width	The horizontal length.
Height	The vertical length.
Linked option	When checked, the initial aspect ratio is preserved when changing the width or height.

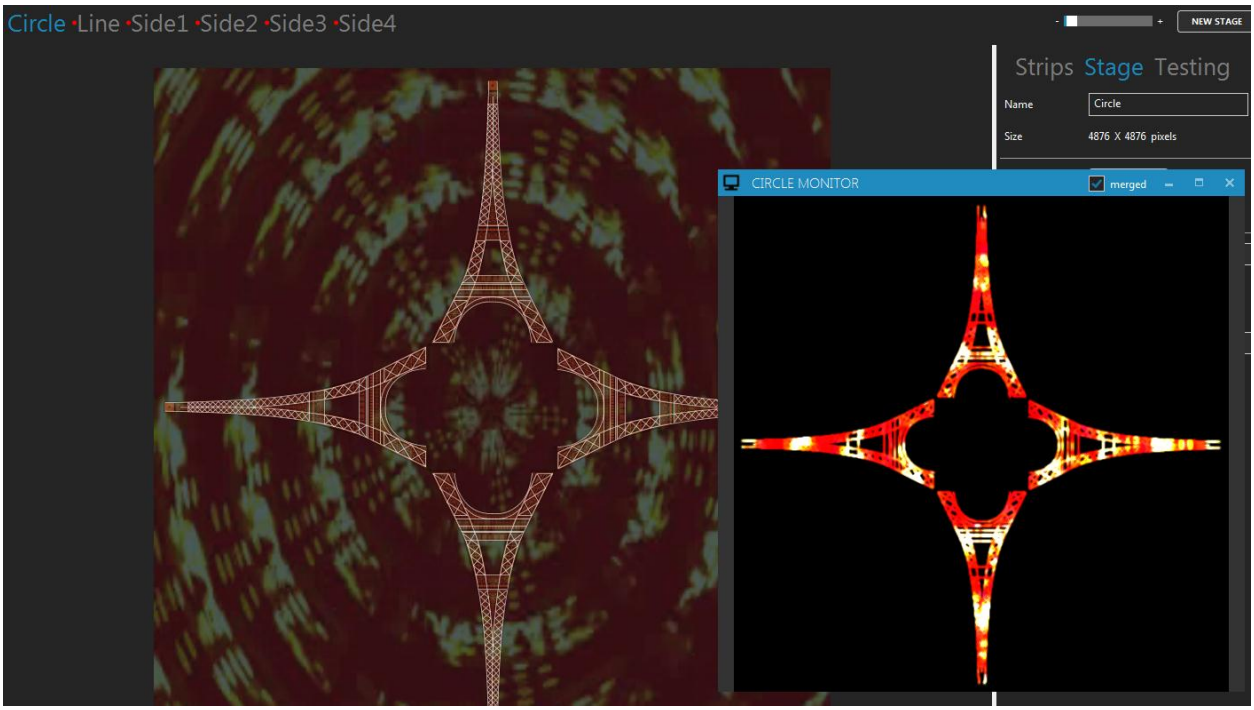
Stage Tab

Shortcut key: alt-g



Name	The name of the stage. You can change it by typing a new name.
Size	The mapping size of the stage. Change it with the resize button.
Merge mode	Determines how to merge when multiple stages target the same LEDs. See Stage Merging and Layering.
Default media	When first loading a stage, you can specify media to be played.
Preview opacity	Determines the visibility of the preview. You can disable the preview by setting the opacity to 0.
Design image	To help you position the LED strips like in the real world, you can display an image in the background of the stage.
(Design image) opacity	Determines the visibility of the design.
Monitor (alt-O)	Opens a monitor window to help you see the final result of the mapping.
Duplicate (alt-D)	Copies the stage and optionally resizes it.
Resize	Changes the size of the mapping surface. The position of your LED strips will not be affected.
Delete	Deletes the stage. Cannot be undone.

Here's the monitor window. You can see the result of the stage only or after all stages have been merged. When you don't have access to the real fixtures, this is an indispensable tool while creating effects. Alternatively, you can use any 3rd party visualizer supporting Art-Net or sAcn.



Tip: When you are editing and are very zoomed in, if a media is playing in the preview, your computer may have a hard time. To help it, disable the preview by setting the preview opacity to 0%.

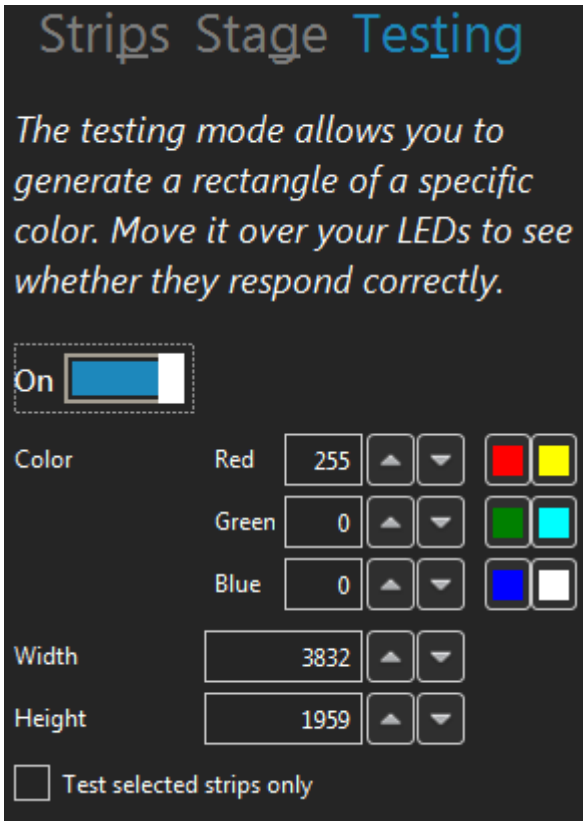
Tip: To help you position the LED strips and fixtures following their physical locations, take a picture of your installation. Then display this image in the background by using the design image feature.

Tip: Try reducing the stage's size and see if the output is still good. Also reduce your videos and other media size accordingly to potentially save a lot of CPU. High resolution media is not always a good thing!

Testing Tab

Shortcut key: alt-T

Quickly test the mapping by generating a rectangle that you can move over the strips.



On/Off switch	Activates the testing mode.
Color	Changes the color of the testing rectangle. It is handy to test the color component order of your strips (RGB, BGR, etc.).
Width, Height	Changes the size of the testing rectangle.
Test selected strips only	If checked, only the selected strips in the Strips Tab will be under test. The other strips will all be off.

Tip: Reduce the width and height of the testing rectangle and drag the rectangle around the stage. This way, you can see if the patch order is right. For example, if dragging the rectangle from left to right makes the LEDs go on from right to left, then you know you need to flip them horizontally. To do so, go in the Strips Tab and click the Flip X button.

Tip: Quickly test the red, green and blue component order of your LEDs by generating a pure red, pure green and pure blue test. For each test, note the color of your LEDs. If you're not getting a RGB order, edit your LED strips and select the LED type corresponding to the order you've observed (BGR, GRB, GBR…).

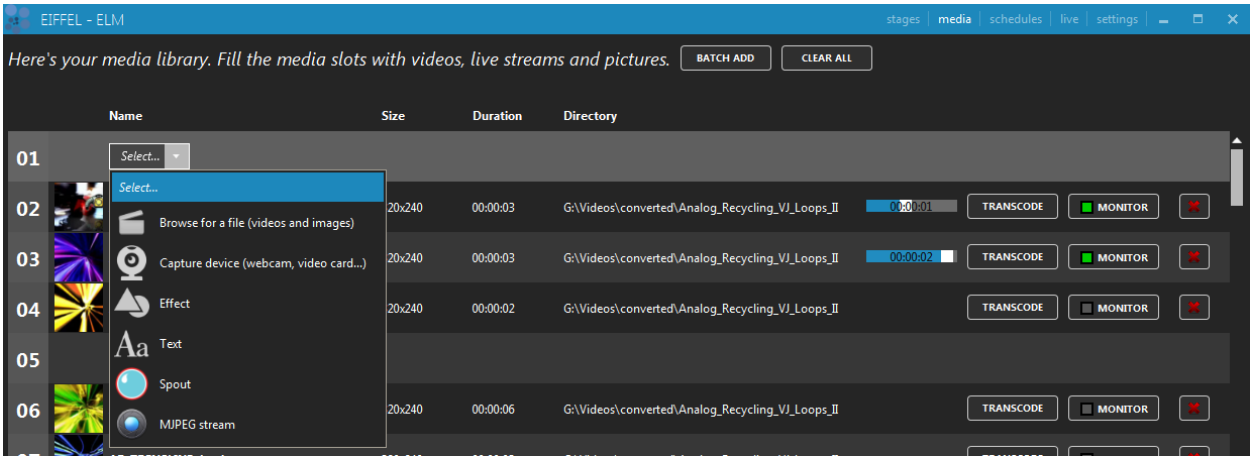
Tip: While the testing mode is active, the DMX is constantly being outputted at the full output rate, even when there's no change. This is handy while you're configuring your LED controllers and want to see if it's working. This is also a good way to test whether your network supports the load.

Tip: Use the "test selected strips only" option, go in the Strips Tab and change the selection in the strip list. This is similar to traditional lighting consoles locate function.

Media Library

Shortcut key: alt-M

You can manage your media and see what's active. Up to 99 media items can be loaded.



Batch add (alt-A)	Loads multiple video and picture files at once.
Clear all	Resets the library.
Transcode	For videos, resize and convert to a mpeg4 format that should play on all computers.
Playback position indicator	For videos, show the position and allow seeking, which is handy for long videos to test specific parts.
Monitor	Opens a window showing the images coming from a media source. Also displays the FPS and other information depending on the media type.
Delete button	Clears a media slot and allow selecting another media.

Video Files

Most video format is supported when the appropriate DirectShow video codecs are installed. A good free codec pack is called LAVFilters (https://github.com/Nevcairiel/LAVFilters/releases). There's no video size and resolution limits. In the absence of supplementary codec packs, you can always play mpeg4 and avi files, which are natively supported by ELM

If you're having playback problems, use the transcode button to convert your video to an mpeg4.

Picture Files

Use static images like bmp, jpeg and png.

Capture Devices

Use live videos captured with a video card input or a connected camera like a webcam. Any DirectX/DirectShow compatible hardware and software are supported.

Effects

The built-in effects library will help you quickly test your installation with pixel-perfect videos. The strobe effect is of particular interest since it's synced with the output, giving you a real strobe which is very hard to achieve with a video source.

Texts

Generate scrolling text with various fonts.

Spout Inputs

Use live videos generated by the most common video frameworks and VJ software. This includes Resolume, Ableton Live, Processing, Max/Msp, TouchDesigner, Cinder, OpenFramework, VVVV, Isadora, After Effects, Mapio, Unity3D and more. The Spout integration gives you total control over the content and is the way to go when you want interactive visuals.

MJPEG Streams

Use live videos streamed via the network by an IP camera or any hardware and software supporting this common streaming format.

Tip: To quickly test your installation without having the final videos, just use the built-in effects. You can create your schedules and test everything right away. Then when you'll get your videos, replace the built-in effects.

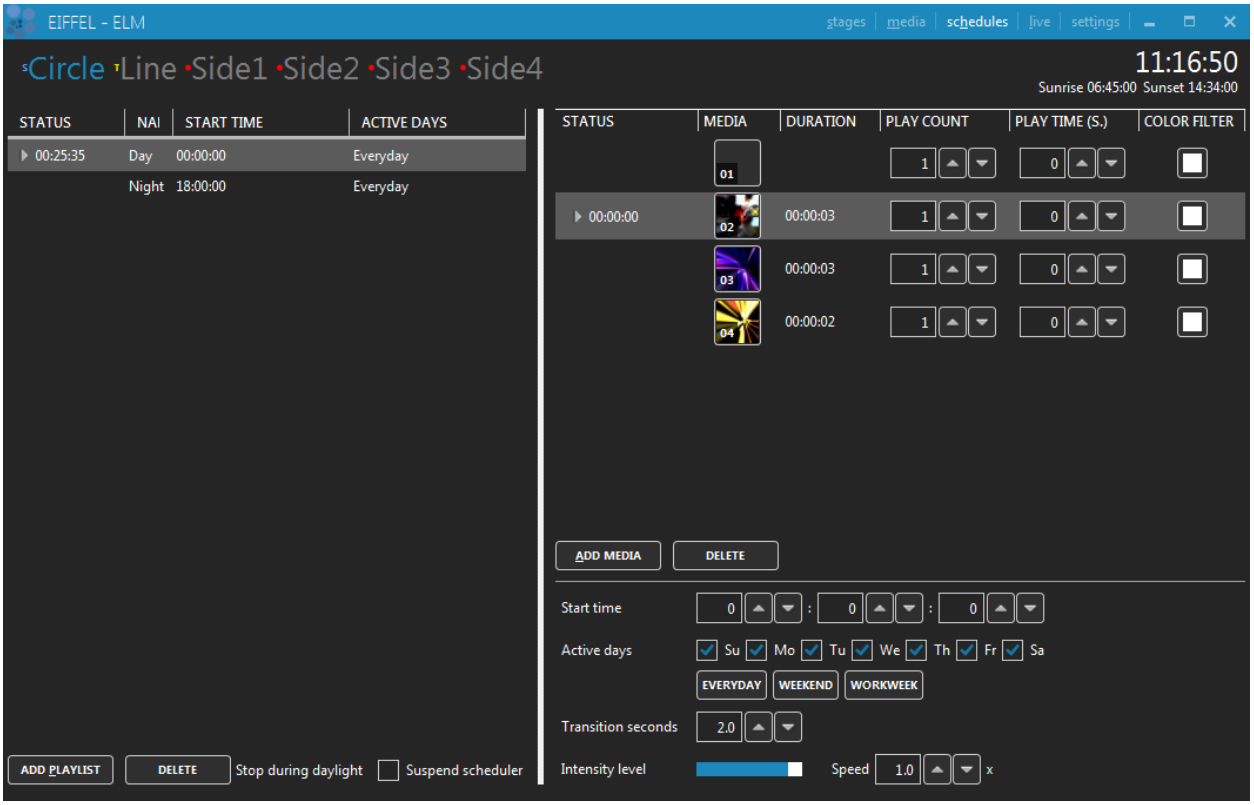
Tip: Use the plain color built-in effect in combination with the color filter to set all LEDs to the same color. You can create simple color chases using a schedule.

Tip: Media file paths are saved relatively to your project file. To make it easy to move your project to another computer, save it in a directory next to your media. Then copy everything to your other computer.

Schedules

Shortcut key: alt-H

Each stage has its own 24/7 schedule. A schedule can contain as many playlists as you need and you trigger them with an activation time and day.



Add playlist (alt-P)	Creates a playlist for the current stage.
Stop during daylight	Stops all schedules during daylight hours based on the sunset and sunrise times.
Suspend scheduler	Temporarily stops all schedules. It is handy to take over and manually select what's playing on each stage in the live mode. This option isn't saved to the project file.
Sunrise, Sunset times	Computed based on your location. See Time.

Select a playlist to see its settings. Double click to play. The playlist settings are:

Add media (alt-A)	Adds one or multiple media to the playlist.
Delete	Removes the selected items from the playlist.
Start time	The time of the day to start the playlist.
Active days	The days when the playlist can be played.

Transition seconds	The time of the fade out/in when changing the current media.
Intensity level	The luminosity level (dimmer). Set to 0 to deactivate the stage.
Speed	The playback speed. Does nothing for live video streams.

Drag and drop media items in the list to reorder. The settings for each media item are:

Status	The playing status, indicating the playing time and number of repetitions done.
Media	The associated media. Click to change it.
Duration	For some types of media like video, displays the total play time.
Play count	The maximum number of times to play this media before playing the next one. Set to 0 to indicate no limit.
Play time	The maximum number of seconds to play this media before playing the next one. Set to 0 to indicate no limit.
Color filter	The RGB color filter to apply to the media. White means no filter.

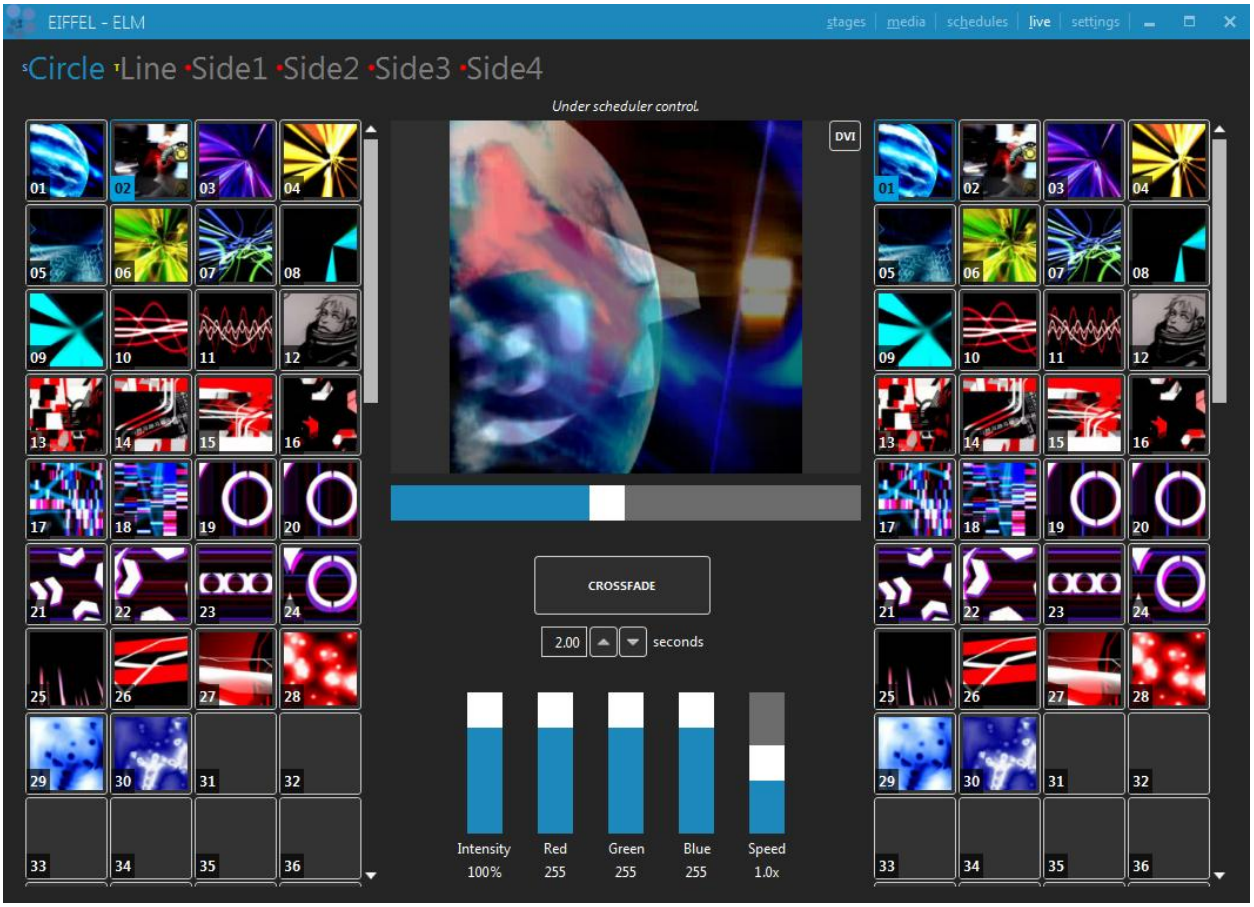
Tip: Create an empty playlist and activate it when you want to stop the playback. For example, stop everything each night at 11PM.

Tip: Suspend the scheduler to temporarily take control of what's playing on your stage using the live mode.

Live Mode

Shortcut key: alt-L

The first goal is to let you see what's playing on each stage and monitor the status. For example, if a playlist is running, you'll see what's happening in real-time, including the transitions. If nothing is controlling the stage, you'll be able to manually select what's playing.



A and B sides	Shows the loaded media. Click a media to select it.
A-B Fader	Smoothly changes the current media between the A and B sides.
Crossfade	Automatically creates a crossfade from A to B or B to A depending on the most active side.
Transition seconds	The time of the automatic crossfade.
Intensity	The luminosity level (dimmer). Set to 0 to deactivate the stage.
Red, Green and Blue	The color filter.
Speed	The playback speed. Used for certain media types only, including video files, built-in effects and texts. Does

	nothing for live video streams.
DVI	Opens a window allowing outputting the video to a projector or TV. Double-click on the window to maximize. Right-click at the top to show the menu. The position of the window is saved in the project file.

Tip: You can use ELM to output video to a projector or TV without controlling LEDs. Simply create a stage and don't put any LEDs on it. Then in the live mode, click the DVI button.

Tip: Using black and white media allows you to use the color filter and get exactly the RGB color you want as output.

Tip: Use the live mode as a monitor to help you see what's going on while remotely controlling ELM with another lighting console. You can also open multiple DVI outputs (one per stage) and use them as monitors.

Settings

Shortcut key: alt-I

Project

This is the overall panel, displaying the most important info about your project status.

New project	Closes the current project and start a new one.
Load (ctrl-o)	Opens an existing project.
Save as	Saves the project under a new name.
Save (ctrl-s)	Saves the project.
DMX Universes	The number of DMX universes used by your project. This is the number used to calculate your license limit (if any).
Stages	The number of stages in your project.
Strips	The number of strips in all stages.
Mapped LEDs	The number of LEDs inside the mapping zones in all stages.
Output rate (fps)	The number of times per second DMX packets are sent. Default is 25.

Art-Net

Settings for the Art-Net universes.

Adapter	Selects a network adapter for the output and the input if using remote control with Art-Net.
Scan nodes	Opens a window and shows the detected Art-Net nodes (devices).
Universe IP addresses	For each universe, enter an IP address to enable unicast and send the DMX packet to a specific node. Type broadcast to send the universe to all connected nodes in the network. Unicast is preferred when using more than 16 Art-Net universes or a WiFi network.

sAcn

Settings for the sAcn universes.

Adapter	Selects a network adapter for the output and the input if using remote control with sAcn.
First universe	Since sAcn supports thousands of universes, set the first universe to use.
Universe IP addresses	For each universe, enter an IP address to enable unicast and send the DMX packet to a specific node. Type

	multicast to send the universe to all subscribed nodes in the network. Unicast is preferred when using more than 64 sAcn universes or a WiFi network.

Time

Settings for accurate sunrise and sunset times.

Your position	Your latitude and longitude position on Earth. You can also select a preset in the list.
Offsets (minutes)	Offsets the sunrise and sunset times. For example, if you want to start the installation 2 hours before sunset, you enter (-120) in the sunset box.
Test helpers	Temporarily modifies the current time and date to help you test your schedule. These values aren't saved in the project file.

License

Manage your licenses.

Backup	Saves your license file in case you need to reinstall your OS.
Import	Imports a license file.

Remote DMX Control

Settings for remotely controlling ELM with a lighting console.

Input mode	Selects how you want to remote control ELM. The current options are Art-Net and sAcn.
Universe	Selects the DMX input universe.
Address	Selects the DMX address for the first stage.
DMX value mode	Percent: makes it easy for consoles working in percent. Raw: makes it easy for consoles working in the 0-255 DMX range.

The DMX sheet showing what can be controlled and by which channel is integrated in ELM. It is dynamically generated based on the current remote settings and your stages. This way, you can't lose it!

In the normal mode, each stage is controlled like an 8 channel fixture as follows:

Channel	Name	Values	Note
1	Remote control mode	0: Remote control deactivated 1-254: Reserved, don't use 255: Remote control activated	Remote control activated only when receiving 255. 0 disables the remote control mode and the stage goes back to being controlled via the schedule (if any) or manually.
2	Media index	0: No function 1-99: Media index	The media to play. If needed, a transition (crossfade) is automatically executed between the current media and the new one. This effectively controls the A and B sides in the live panel for you.
3	Intensity level	0: Stage deactivated 1-255: Level	The output level (dimmer). When at 0%, the stage is considered to be deactivated and doesn't override stages with a lower precedence anymore - it becomes transparent. To keep the stage activated and force a black output, use the color filters at 0%.
4	Red filter	0-255	Filters the color output.
5	Green filter	0-255	Filters the color output.
6	Blue filter	0-255	Filters the color output.
7	Playback speed	0: Paused 1-255: Speed up to 10x	For some type of media like videos, effects and texts, the speed controls how fast the playback goes. For live streams, the speed has no effect.
8	Transition duration	0: No transition 1-255: Duration up to 20 seconds	When transitioning between media, this controls the duration of the crossfade.

When no DMX data is received for more than 15 minutes, the remote control mode will automatically be deactivated. This is a failsafe feature in case the remote console has a problem. When this happens, the schedule resumes right away. If there are no schedules, then the current media will continue to play.

Tip: You can use a DMX input universe that is already used for output. In this case, ELM will ignore Art-Net coming from the same computer (including its own packets).

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